Meristic variation of leg bristles in spider mites (Tetranychus urticae).

Leponce, M. ¹; Noti, M.-I..²; Bauchau, V. ²; Wauthy, G. ¹

¹ Institut Royal des Sciences Naturelles de Belgique, Département d’Entomologie, 29 rue Vautier, 1000 Brussels, Belgium;
² Netherlands Institute of Ecology, NL-6666-ZG Heteren, Netherlands.

Pattern of bristles (mechanoreceptor setae and chemoreceptor solenidia) on mite legs are well defined and species-specific. These bristles commonly show numerical variations in the form of unilateral or bilateral complete absences. Pattern (chaetotaxy) and numerical variation of leg bristles were studied in strain White Eyes I of Tetranychus urticae at each developmental stage and in pupae. Bristles emerged gradually and the proportion of variable bristles increased during the ontogeny: 5% in larvae, 5% in nymphs 1, 9% in nymphs 2, 33% in females, 49% in males. Female leg chaetotaxy comprised 123 setae and 8 solenidia on each side of the body. Males had 5 additional solenidia. Some bristles absent at their emergence stage consistently were lacking at later developmental stages whereas others bristles showed no persistent absence through growth. At the adult stage, most bristles varied in less than 5% of the individuals. By contrast, 2 setae and 4 male solenidia varied only in males with a frequency over 5% and 10 setae varied in 5-53% of the adults of both sexes. Such frequent variations might be related to the evolutionary trend for a reduced number of bristles known to occur in mites. The mean number of variable bristles within individuals was higher in males (3.2 ± 3.8) than in females (2.1 ± 1.9) (t-test, 104.3 df, P= 0.03, considering the 131 bristles common to both sexes). The frequency of absences was similar on the left and right sides of the body. Variations in T. urticae conform to the concept of fluctuating asymmetry described in various other phyla. The higher asymmetry of males compared to females could be a consequence of their haploidy.